

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

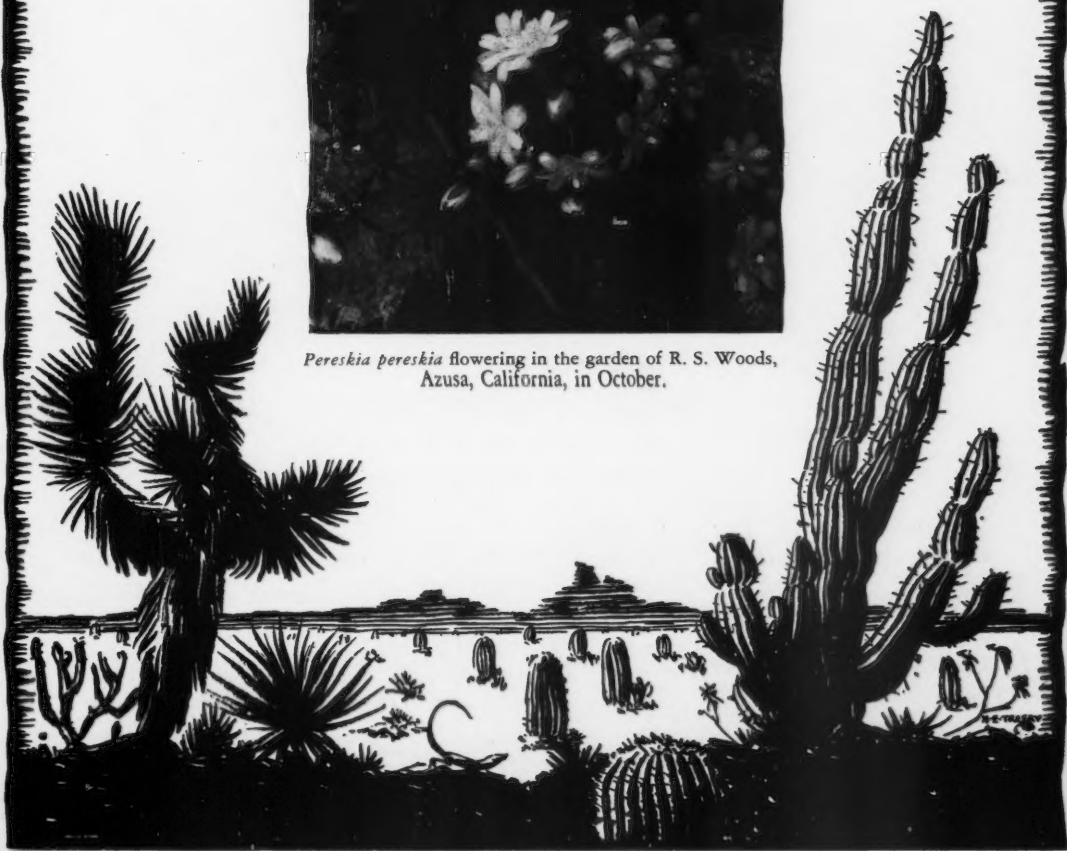
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No. 3



Pereskia pereskia flowering in the garden of R. S. Woods,
Azusa, California, in October.



CACTUS AND SUCCULENT JOURNAL

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A corner of the Brockman collection in Oregon.

AN OREGON COLLECTION

As we have had pictures and writings in the *Journal* from nearly every place but Oregon I thought that you might be interested in pictures from one of the largest collections in the N. W. We have about 1500 species now and still adding. Mrs. Brockman bought a small plant in a Department Store in 1922 and that gave us the cactus bug. In those days I could not get any body to look at them—the first one to show real interest was Mr. Gates when he was here in 1930.

Our collections are always open to visitors and we are proud to say that we have had people from the four corners of the world to see them.

When I got my first *Cactus Journal* I got a number of plants from Mr. Frick, Dr. Houghton, Mr. Beecroft and others. My father sent me several Euphorbias from Denmark which were appreciated very much. He was caretaker in the Rusias Gardens in Hellerup, Denmark, and they came the size of a peanut, but they are over one foot high now.

Of late I have been on a Hobby Program on the radio, trying to get other people interested in cactus.

WM. BROCKMAN,
2244 S.E. 135th Ave., Portland, Ore.

Collecting Cacti in Lower California

By GILBERT F. TEGELBERG

Late last summer, a year ago, Howard Gates and I started out on a trip down the peninsula of Lower California. My new light pickup truck was heavily laden with carefully selected food and other necessary supplies, sufficient to last us for a month or more. We had made no definite plans as to how far south we would go; that would depend entirely on the element of time, weather, and condition of roads.

We had made very good progress as far south as San Ignacio and had seen many lovely plants. We camped one afternoon and night at Bahia de Santa Rosalia where the rare *Mammillaria blossfeldiana* can be found. These small plants are most interesting in that they draw themselves down beneath the surface of the ground during a period of drought, thus protecting their bodies from the hot sun. What a beautiful place this was to camp. Yes, we would camp here again on our return. The surf was most inviting, as were the fish who just insisted that we have them for our dinner. Needless to say, we had a most delicious dinner that evening and a very satisfying breakfast the following morning.

Leisurely driving along, stopping every now and then to make plant observations of such odd forms as *Lophocereus schottii* monstrosus, we stopped one night as guests of Mr. and Mrs. Harding at the El Arco gold mine. Their generous hospitality was indeed appreciated. Reaching San Ignacio on the sixth day, we restocked our supply of gasoline and water, and after talking to a friend of Mr. Gates about a stretch of country between San Ignacio and La Purisima, we decided to try it even though we had been told the road would be very bad. We had gone but eight miles when, for some unknown cause, our load of precious supplies caught on fire. I headed the truck into the wind and stopped. At first it did look hopeless as our fifteen gallon drum of gasoline was in the midst of flame; we miraculously cleared the truck of all burning objects and smothering the fire which was blazing from the leaking spigot of the gas drum, then hastily we drove the truck to a safe distance. In fighting the blaze, we were both burned quite badly and the job of salvaging what supplies we could was most painful. A black column of smoke reaching high into the evening desert sky attracted the attention of near-by native ranchers. Men, women, and children all came on the run. The men offered us assistance, but the women and children were a

nuisance, wanting to borrow everything we had salvaged. The damage to the truck was slight, and after we had given our burns first aid we turned around and headed back to San Ignacio. Here we stayed for a few days allowing our burns to heal a bit and to restock our supplies.

Determined to cover this stretch of country, we started out again. It took us three days to cover a distance of 125 miles. One day we were only able to make 23 miles and a big day's work it was. The day before in late afternoon, a heavy storm came upon us, and it was indeed a near-hurricane, if not a real one. We were driving along on top of a high mesa just a few miles from the ocean when a terrific roaring sound warned us not to go farther. Taking advantage of a slight down-hill grade, I nosed the truck into the wind and stopped; I believe we would have blown over had we not taken this precaution. The storm lasted for six long hours as we sat cramped in the cab of the truck with lightning striking all about us. What a thrill it was!

The plant life was not as interesting as we had hoped, yet we did not regret having made the trip. It was a thrilling adventure if nothing else. Our journey southward was soon to end for when we reached Poso Grande, there was too much water in the Arroyo for us to cross. A dozen or more natives were rather disappointed, however. It was quite apparent that they fully expected to profit in pesos by our misfortune had we tried to cross it. This was just on the edge of the Magdalena Plain, the home of the "Creeping Devil" (*Machaerocereus eruca*).

Our speedometer reading showed us we had now traveled 803 miles since leaving Tijuana. Heading homeward, driving through forests of *Lophocereus schottii*, *Lemaireocereus thurberi*, *Machaerocereus gummosus*, *Pachycereus pringlei* and *Opuntia prolifera* galore, we stopped at Comondu for the night and continued on the following day. The country was getting more beautiful as we traveled on. Now we were heading toward the gulf side of the peninsula. There were miles of *Cochemia poselgeri* on either side of the road in full bloom, a sight I shall never forget. Pausing for an hour at the tip of Bahia de la Concepcion to take a snap shot or two, we enjoyed some "Uvas" (grapes) which we had purchased at Comondu, then we went on again toward Mulege. The Mangrove trees grew in huge thickets along the shore line, resembling grotesque creatures with numerous skinny legs.

Along the rocky cliffs, an occasional *Ferocactus rectispinus* could be seen. Their long spines are none too inviting, yet we must collect a few of these. Camping on a high mesa north of Mulege, we were pleasantly surprised the following morning to see white flowering *Fouquieria* all

about us; these were the first we had seen.

Driving on again, stopping at Santa Rosalia, San Ignacio, and on to El Arco where again our friends, Mr. and Mrs. Harding, welcomed us. Having lost all of our fishing tackle in the fire, Mr. Harding equipped us with the best he had



Collecting CACTI—TOP LEFT: A 40 foot *Idria columnaris* in full bloom. TOP CENTER: *Fouquieria peninsularis*. TOP RIGHT: *Yucca valida*—the Joshua Tree of Lower California. CENTER LEFT: Part of a jaw bone of a whale—the colored gentleman is Howard Gates! BOTTOM LEFT: *Agave nelsonii* in the foreground with *Pachycereus pringlei* in the center background. RIGHT CORNER: A "Darado" posing with the author.

and gave us a letter, instructing one of his men to take us out in one of his small boats on San Francisquito Bay. This was 50 miles distant. In three hours of most thrilling sport, we had caught a boatload of very game fish, Mr. Gates catching the largest, an 80 pound "Garopa," while I had a thrill of my life landing a 40 pound fighting "Pecca Gillo." This beautiful fish fights every inch of the way and leaps high above the water, shaking his head in an effort to free himself from the hook.

That night we camped close to the beach. Howling coyotes prevented us from getting much sleep. The following morning we found their tracks within 25 feet from our camp. Our skipper, Senor Santa Ana, had an early breakfast with us and enjoyed our hotcakes, bacon and coffee, and told us he had never eaten this kind of food before. After catching another boatload of fish, we headed back to El Arco. The delicious fruit of "Pitahaya dulce" (*Lemairoceres thurberi*) was abundant, and we stopped every now and then to sample it. We also collected a few small *Mammillarias*—these may prove to be *M. Goodridgei*.

Time was going rapidly and we hurried on. Yes, we camped again at the beautiful Bahia de Santa Rosalia, and again crossing to the gulf side of the peninsula, we made camp at Bahia de Los Angeles. Here we bargained with a native fisherman to take us out to Isla Angel de la Guarda, the home of *Ferocactus Johnstonianus*. There was a very rough channel of about 12 miles which we had to cross, and according to the owner of the boat "the moon was not favorable." Mr. Gates had crossed this same channel a few years ago in a small dugout canoe and told the Senor all about it, after which he agreed to take us out the following morning. Just before entering the channel the skipper and the two members of his crew got in a huddle. We soon learned what it was all about. They were making their last effort to discourage us by raising the price on us. We did not like their method, yet we did want to reach the island. I had a heavy chalk line trailing far behind the boat when all of a sudden I felt a good strike, and before anyone was aware of what was going on, I landed a beautiful and very game "Darado." Of course there was no time for arguing over a few extra pesos now, so we settled everything by splitting the difference and giving them the fish. Crossing the channel and cruising along the shore line for several miles, we finally spotted what we were looking for. Sea lions by the thousands were barking at us as our boat came to anchor in a quiet cove. Going ashore in a dugout canoe, we climbed to the top of a high plateau, and

there we found hundreds of beautiful golden-spined specimens of *F. Johnstonianus*, many of which were in fruit. A few *Pachycereus pringlei*, *Opuntia bigelovii*, and an occasional *Mammillaria dioica* were the only other cacti we noticed at this point of the island.

The following morning we went to a small island a few miles off shore. Mr. Gates wanted to make further observations on one of his latest discoveries, *Mammillaria insularis*. We found it growing along with another of his discoveries, *Echinocereus ferreirae*. Returning to our camp, we had lunch and started for home. We took a picture of a beautiful specimen of *Idria columbiana* and again of a huge *Pachycornis discolor*, surrounded by *Agave nelsonii*.

It was most interesting to note the many changes in plant life as we traveled along, and then too, to have with us all the way such plants as *Mammillaria dioica*, *Opuntia prolifera*, and *Machaerocereus gummosus*. Driving along the Pacific coast, we paused to examine an enormous jawbone of a whale, and further on we stopped to kill a small rattle snake, the only one we had seen on our entire trip. As we neared the end of our journey, after a month of travel down and back on the peninsula, I could not help but feel that I was indeed fortunate in having as my companion, Howard E. Gates, "The King of the Chollas" as the natives call him. His knowledge of this rugged country was most helpful. Crossing the border at Tijuana, leaving behind us "The Land of Mañana" it seemed to say to us "¡a Dios Amigos!"—hurry back.

SAVE YOUR EGGSHELLS

By E. C. KRAUS

Struck with the idea that calcined eggshells should be good for cactus, I began it several years ago and can report that at least it does not seem to do any harm.

Put the eggshells in a can (a one-pound coffee can with lid is convenient) and give them a good roasting in your incinerator. Not in the house—the odor doesn't resemble jasmine. The result is a sort of charcoal of the organic materials, plus calcium phosphate and a little sulphur. I pulverize it in a mortar and mix it into the planting soil.

I attribute the return to robust health of a couple of sick plants to the use of this ingredient, though I may be wrong. Apparently striking results were obtained with two *Echinopsis* which looked to be on the verge of perishing. One of them doubled in size and the other appears to be developing a crest, in addition to resuming a healthy color and sprouting a lot of offshoots. (I do not guarantee crests.) The stuff seems to pep up *Epiphyllums*, too; and it has done no plant any damage.

THE STAPELIEAE—By Alain White and Boyd L. Sloane. The first book on Stapeliads. Published in 1933. A very few of this first edition available at \$3.00. Express charges collect. This edition will be a rare book item.

CACTUS FROM SEED IN PENNSYLVANIA

Raising cacti from seed by a beginner should be interesting to the average novice as I am telling the story from the start. I have, in the past, had articles published in the Flower Grower and Better Homes and Gardens magazines telling some of my experiences with Alpines, Iris, etc.

Cacti are comparatively new to me, but my past experience, plus my reading and study of books on cacti have helped me in this new branch of my hobby of growing flowering plants from seeds.

About a year ago I happened to be given an old 1934 catalog of Robert Blossfeld, Potsdam, Germany. It lay around until about three or four months ago when one cold winter night I started to look it over. I was sold and enslaved by the cactus bug in a few days and started to buy some locally, some from florists and then from cactus growers. This did not satisfy my longing to see things develop under my own hands. So I sent for the following: 1 mixed pack *Echinopsis*, *Mammillaria*, *Rebutia*, *Lobivia*, *Coryphantha*, *Parodia*, *Echinocactus* also several small packs of about 20 seeds each of some individual kinds, also *Gymnocalycium* mixture. In all about 1500 to 2000 seeds. Then I started to mix my soil using Houghton's *Cactus Book* as my guide, also several other articles I had read about in books.

I went to the woods for black soil and mountain sand. One-third black soil, one-third sand, one-third garden loam, sometimes more sand, sometimes more humus according to variety as per Houghton. Then after mixing and leveling, this soil was baked in the cellar furnace on the coal ledge to destroy all weeds, insects and worms. For pots I used old porcelain cook pots, wash basins, etc., from the city dumps; these I have been using with fine results for years for both seeds and plants. Some holes were made in the bottom for drainage then a layer of stones the size of marbles to walnuts, then $1\frac{1}{2}$ to 2 in. of smaller gravel then the soil mixture. Then the soil and container were baked until very hot, about $\frac{1}{2}$ to 1 hour, turning once to get the both sides equally baked. The 1 inch of top soil was sieved through a window screen.

Soon the seeds arrived from here and there. Twelve old cook pots were filled and nicely smoothed on top. Then little depressions or rows were made by pressing gently with the edge of a post card. Now comes the tedious but interesting part to me. Each seed was taken from its paper and dropped one by one by holding the paper near the soil. The seeds were placed about three-eighths inch to one-half inch apart in rows equally spaced all over the top. Then with the aid of a reading glass in one hand and a toothpick (sharpened) in the other, the seeds were placed one by one with the scar or root end downward. These were just pushed into the soil with the top visible in some cases. This painstaking method gives each good seed a chance to grow. It takes about two hours to plant 100 to 150 seeds this way, but I believe it is worth the effort, as I see how easily the little round green heads are pushed above the soil by the dozens within about a month's time. After being watered the seed pans are covered with glass and set in a warm dark place about 65 to 75 degrees temperature.

After sowing I took an old salt-cellar, put a piece of sugar bag on top with a rubber band, filled it with Semasman which I dusted all over the top of the soil to prevent fungus and damping off, which comes even after baking the soil although not as easily. The glass on top was also washed in boiling water.

Now it is necessary to keep a careful watch to keep them not too dry and not too wet while they are grow-

ing under glass in window-sills. Mud is smeared on the glass to keep the strong sun out until such time as they are hardened and grown sufficiently to stand the full sun or part sun according to the demands of each variety of species according to Houghton's Book. This is important, to gradually get them accustomed to the sun.

Although many are desert plants and may revel in the hot sun later on it seems they turn red if too strong sun is given while seedlings are small.

I haven't lost any so far and I believe in following seedsman Kelly's advice when he says in the *Cactus Journal*, "when they get red in the head, give less light." I'm an experimenter it is true but what I do not have to pay for in ruined plants by trying my own way, I'm going to avoid as I believe in taking the other fellow's advice.

I also have three plants of *Euphorbia obesa* from four seeds which cost me 50 cents. They came through in 15 to 20 days at about 75 degrees temperature in a warm room and are now about one month old. I am especially pleased with them because the descriptions and pictures show them as vari-colored checkered baseballs. Mine are now like green peas rolling on the soil.

JUNE

Soon it is time to give the young, pinhead size seedlings fresh air. First I put an old pot or pan or a box upside down on the ground. On this I have a tray (old beer trays serve this purpose) to hold water. Set the seedling pan or pot into this tray.

I have a circular piece of window screening covering the pan to keep the larger insects and mice away—also birds. At three places I have a piece of metal so bent that it forms a bracket about $\frac{1}{4}$ to $\frac{1}{2}$ inch above the screen. This holds a piece of glass in place. The glass, that covers the pans, are smeared with mud about the thickness of mustard. Then criss-cross lines scratched on to let a bit of sun in, but not much. The mud side I turn down, so the rain will not wash it off. It dries on, of course. The young seedlings must be shaded for a few months. I put them out in full sun but with this protection for less light for certain varieties which I find turn red easily.

Some seeds come slowly, I find. *Coryphantha* are slow in germinating also *Gymnocalycium*. In about two months from sowing only a few are showing. *Lobivia*, *Rebutia*, *Parodia* have germinated well and look like a lot of little pygmy heads with a top knot of little spines. Just now I find a fine green moss beginning to grow on the surface of the ground, and I let the sun in more it will check it but it will also bronze the seedling. Solve the puzzle. That's what makes growing from seed so interesting. Always something to tax your ingenuity and pique your pride. The pans must be carefully watched morning, noon and night to keep them moist but not wet. I water from the bottom. *Mammillarias* seem to be slow in coming, only a few showing in about 70 days. Here's hoping.

NOVEMBER

I lost about 100 small seedlings of *Parodia* through depredations by slugs till I started to slug them. I have a measly half dozen *Parodia* left. It seems most of my seed germinated about 50 percent except the *Parodia* which seems to have germinated close to 100 percent.

This past week or two I have moved the little marbles and peas all into the house by sunny windows and transplanted most of them into larger growing quarters giving each plant from an inch to inch and one-half space to expand. Transplanted into about

the same soil as for seedlings but just a bit more garden loam and leafmold than formerly also a bit of bone-meal. Drainage as before in bottom of wash basins dishpans, etc.

The problem that now faces me is to keep the hundreds of seedlings growing behind lace curtains in sunny windows. It seems the lace curtain gives just the right amount of filtered sunlight, at least I must compromise, as the Mrs. insists on the curtains. So be it. Far from me to invite too much trouble, as I now have home-made crude benches as high as the window sill in practically every window. But the better half is grudgingly beginning to be slightly interested in these little round imps sitting so composedly there on the soil like so many little porcupines. Sometimes when I'm not looking I find her examining them, rather closely too, as I do. The fascinating part of the pack of mixed seeds of one species or genus is the varied forms one notes as they grow and put forth their many different spines and assume such varied shapes. I sometimes take a reading glass and just look and look. Try it yourself. It's absorbing.

On Saturday afternoon and Sunday when I'm home I turn the pots and pans several times daily to get equal sun all around. Other days I turn a pot one-quarter way every noon at lunch time. It seems the transplanting has not disturbed these little cactipusses they are serenely going on. Of course I tried to set all roots with an ice-pick and tooth-pick for smaller ones. The pans I am setting away in a warm place to germinate some more seeds if there are any slow germinators. I believe I have most of them. The following 100 seed packets germinated as follows:

Parodia, 100; *Lobivia*, 40; *Rebutia*, 60; *Echinopsis*, 50; *Coryphantha*, 10; *Mammillaria*, 50; *Echinocactus*, 60; *Gynnocalycium*, 35; *Echinopsis violaceae*, 50; *Notocactus Haselbergi*, 6 out of 15 seeds; *Mammillaria zeilucaniana*, 1 out of 20; *M. longiflora*, none so far; *Echinocactus polyancistrus*, 1 to 20; *Echinocereus ridgissimus*, 1 of 20; *Opuntia floccosa*, none out of 20; *Euphorbia obesa*, 3 out of 4 seeds.

JOHN T. FURCHNER, Allentown, Pa.

FROM DELAWARE

Received my June "Cactus Journal" and to my surprise J. R. Brown has named and described the *Haworthia* I have but did not know by name. Have been following the "Notes on Haworthias" each month, hoping mine would be named before the series ended. Picked up the plant at a corner florist in the market place, asked him what it was, but he did not know. So now there is one less plant I'll have to find the name for. Here's hoping more pictures and descriptions in the *Journal* will help us name our plants.

Thank you very much for publishing my name for some one to write me. In this morning's mail received a very nice letter from Mrs. M. H. Woodman from Springfield, Mass.

One paragraph, page 193, entitled "From Oklahoma" states my sentiment also and that is about "Meters, Decimeters, Centimeters, Millimeters." Our rulers and yardsticks are marked out in feet, inches, and fractions of inches. I have each of my plants listed on separate cards as to date received, diameter and height, all in inches. In the fall I take the measurements again and mark the card so I know how much the plant has grown during the spring and summer.

Received a *Thelocactus bicolor* with 2 buds, which were straw colored, from a nursery last April. As I have never had a plant in bud, waited for these buds to open. Last week in looking over my plants to see if there were insects on them, saw a big green bud, so knew the straw colored ones would never open. The

package coming from California may have been on the way too long and so dried the buds. Am waiting very anxiously for my first flower.

My husband has at last finished my miniature greenhouse. It is 3 ft. by 4 ft. Have copper screen at both sides, Cel-o-glass front and slanted hinged top, which I leave up when the sun shines. As this section is pestered badly by Japanese beetles will have my husband put in a removable copper screen top. In the wooden box section have peat moss, in which I have plunged the pots.

Last week we had it very hot, so watered my plants every other afternoon after the sun had been off the plants about an hour. Used water which had been left in my sprinkling can for the 2 days in the hot sun.

Is *Harrisia bonplandii* and *Eriocereus bonplandii* the same plant? In "Questions and Answers" read where *Chamaecereus silvestrii* needs full sun in order to flower. Had mine in the full sun, but the plants turned fire red. Got the plant in Aug., 1936; has many new shoots, but never flowers. Does it hurt the plant when it gets so red? After a few days in the shade it gets green again. Had a grafted *Chamaecereus crassicaulis* since last Sept.; by last week the *Chamaecereus* had taken all strength from the stock. When I received the plant was warned this would happen. Have the scion in dry sandy soil with a glass over it to see if I can get it to grow on its own roots. Would hate to lose the plant as each shoot has such odd growth.

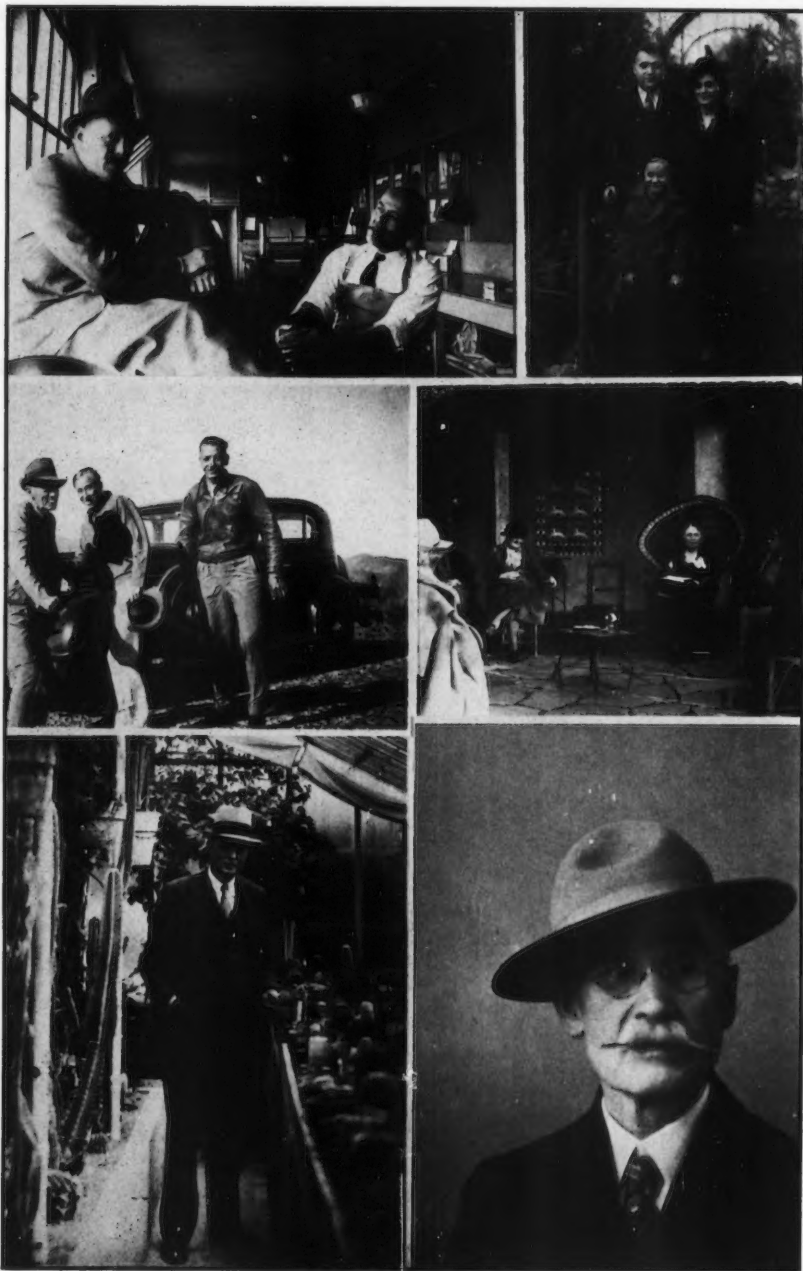
Have a *Haworthia fasciata* which had two very small shoots last Sept. These two shoots are getting quite large and now two more shoots have appeared. The plant is beautiful since the hot sun shone on it last week; the under part stays dark green with white pebbles, the upper flushed pink.

My *Lithops bella* was nine-sixteenths of an inch above the soil and seven-eighths of an inch across when I received it; the new pair just showing through the old pair. The dried up skin that had been on the old pair came off easily with tweezers. After a week of heat, the new pair has shrunk to even with the soil which was sprinkled with a mixture of powdered red brick and charcoal; and only one-half inch long by seven-sixteenths of an inch wide at the slit. Unless I look very close can't make out the plant as it is very wrinkled and looks like the charcoal and brick top dressing.

My *Sanseveria zeylanica* has a flower stalk shooting up. Due to a long cold, wet spring it is very late this year. In 1936 and 1937 its flowers were opening from June 25th till July 4th. Due to moving so much the last year, the tips of the leaves got hit, stopped growing and turned brown. The new shoots are fine though. So far have noticed it is only the new shoots which flower, shoots which have flowered previously do not flower again. Have both the *Sanseveria laurentii* and *zeylanica*. *S. laurentii* bloomed in 1935 and 1937, none in 1936, none showing so far. *S. zeylanica* bloomed 1936, 1937 and ready to in 1938. Both plants were bought at a 5 and 10c store, a single unrooted shoot each in 1930. *S. zeylanica* has 12 shoots, longest leaf 34 in. *S. laurentii* has 10 shoots, longest leaf 33 inches. Both are very pot bound in 6 inch pots. Guess I'll have to put them in larger pots this year after the flowering period.

There is one part of the *Journal* I am always sorry to read, that is the "Field Study Trip" notices. Would like to be on them instead of reading about them later in the *Journal*. The articles are nice to read about, but what good times must be had by those sitting around a camp fire at night, talking over their experiences.

MRS. C. NICKOLAUS, Del.



MEET A FEW CACTUS FOLKS

TOP LEFT: Clarence Clum talking over the cactus situation with our late friend Billy Macchlen. RIGHT: Ladislaus Cutak and his family. CENTER LEFT: Howard O. Bullard, Ye Editor, and Gilbert Tegelberg facing a 40 mile wind at Ord mountain, the home of *Opuntia erinacea*. RIGHT: Dr. Jacolyn Manning addressing a study group on the conservation of desert plants. BOTTOM LEFT: J. F. Parks in his glasshouse at Dallas, Texas. RIGHT: C. W. Armstrong, Vancouver, B. C.

Recording Variations

By GUSTAF STARCK

In the May, 1936, JOURNAL there was a very interesting article by Mr. Wright Pierce. From his point of view he is correct, viz., not to be too hasty in naming new species; but his idea to cultivate—that is to take the plant from its natural surroundings and plant it under different conditions, and let the plant stay under cultivation in order to see if it remains the same, is wrong. Any wild plant—bush, tree, annual or perennial, when taken from its natural surroundings of densely wooded, swampy, high altitude, low altitude, desert or semi desert regions,—will always change.

From another point of view I think he is wrong,—“to wait eighteen months to see the results!” When a young botanist with his book under his arm goes out in the open to study he ought to be able to determine the name of the plant then and there, not to wait eighteen or more months for this determination. Neither should he wait for the seeds to determine if the plant comes true to the mother plant. I have heard this question brought up to me many times, “How will the seedlings look?” Even the seedlings in cultivation change their characteristics compared with seedlings in their natural surroundings, especially so when you cannot imitate the natural conditions.

With regard to naming new species I am very much in favor of Mr. Pierce's conception not to be too hasty. But what I do advocate is to name and describe the different variations as varieties. So when a young botanist comes upon one of these variations, he can instantly put his finger on it and say, “This plant's name is so and so, var. so and so.”

This is my conception of how the different genera and species with their many variations ought to be classified, and going back to Mr. Pierce's article: the different variations of *Mammillaria microcarpa* which are discovered in the field should be fully described and given a name not as a new species but as a variation.

For example, I have seven different types of *Mammillaria microcarpa* with golden spines, black spines, coarse spines, and fine spines. The one with golden spines, I took four years ago, the other about three years ago and all are today the same as when I took them. All of them are different, but according to our present system they must all be classified under the name of *M. microcarpa*, which according to any conception is wrong. The same argument holds for

variations in *Echinocereus engelmannii*, *Opuntia fulgida* and many others. Our present botanical books on cacti leaves to the young student too much of his imagination in classification.

My seven different plants belonging to the *M. microcarpa* or *M. milleri* types have lived in the same soil and climate for three years and all still possess the same marked differences that they had when first collected. I kept a detailed chart with careful records of the differences found in seven collected native plants. There has been no reversion to type as Mr. Pierce's experienced with his after only eighteen months.

Mr. Pierce attributes the variations to soil and moisture conditions and admitted that no general rule would hold for exactly what caused these differences which disappeared when all were transplanted in a place with entirely different soil and moisture conditions. My experience in Arizona where the environment is more nearly like the native state of these plants does not confirm this tendency to revert to type when the soil and moisture conditions have been identical. These differences after three years still persist and the question still remains: Are they the same variety? Mr. Pierce has found they are—I have not!

For this reason I believe that plants which are as sensitive to environment as cacti should be described, classified, and named in the field.

I understand that the purpose of classification is to set up exact descriptions of what actually exists. We have observed since the beginning that climate and locality produce changes in plant life as well as cross pollinization, survival of the fittest, etc., especially among cacti. The evolutionary influence is shown by the thousands of species we now know. If climate and locality is such a great factor in development of species and varieties, why shouldn't classification (naming and describing) be done with respect to this factor?

One thing seems sure through our respective observations. It is not safe to assert that a cactus growing in an entirely foreign environment is of such and such species or variety. For instance, *Ferocactus Johnstonii* transplanted from Arizona desert to Huntington Botanical garden lost almost entirely its native characteristics.

In the case of the Arizona and Texas species of *Echinocactus horizonthalonius* there is such a marked difference between the two flowers, arrangement of spines and spine cushion, etc., that

they almost deserve a segregation. If not, why not call the Texas plant the true species and the Arizona species a variety and thus describe both?

I have three types of *Echinocereus coccineus* taken in three different localities. Yet the main characteristics hold good for all three specimens even though the outer appearance is different.

I do not agree with some botanists "to wait and see the flower" in determining the species or varieties in question. For example take a flower of a *Helianthus aneus* and a flower of *Helianthus tuberosus* and no botanist in the world can tell which is which. The similarity in flowers should not be the determining factor for calling the many different varieties found in *Echinocereus engelmannii* all by the same name.

In the January, 1936, JOURNAL I noticed an article about *Opuntia spinosior fulgida*. I fully approve the naming of this plant as it conforms with an experience of mine in Sweden. I discovered a *Phinanthus* which was neither major nor minor. I sent the specimen to Prof. Swenland in Sweden. He named it and described it: *Rhinanthus major-minor*.

I fully agree with Mr. Pierce not to be too hasty in naming new species, but all different variations appearing in the field should be recorded and fully described and given a name.

For reasons stated above my conception of the cactus study can be reduced to the following two rules:

1. Examine the plant in the field.
2. If not corresponding with type, describe it and give it a name either as a new species or as a variety of type.

The study of the cactus family will then no longer remain 99% guesswork and 1% imagination.

Succulents for Winter Window Gardens and Terrariums

From *Garden Gossip*, December, 1937

Rock gardens are ideal places for all succulent plants, which are equally at home in a border, on a slope and terrace, or beside a wall. Drainage is an essential and must be insured for these plants, if success is to be attained. A well-lighted position must not be overlooked either, as most succulents are sunworshippers and require Old Sol's rays to open their lovely blossoms. There are about thirty-five kinds of cacti that can be successfully grown in the all-year-round rockeries of temperate America, besides the numerous species of *Sedum*, *Sempervivum*, *Portulaca*, *Talinum*, *Yucca* and *Agave*. In certain localities where the winters are continuous and severe, it will be highly satisfactory to protect some of the plants.

Most of the cacti that can be grown outdoors belong to the genus *Opuntia* or prickly-pears. These are for the most part plants of a low, spreading habit, with either short or long (mostly orbicular to oblong) pad-like joints. In Virginia

can be found two or three species native to this state. Among the prickly-pears the following are recommended for trial in the mid-south: *Opuntia compressa*, *torispina*, *macrorbiza*, *rhodantha*, *polyacantha*, *fragilis*, *trichophora*, etc. Of the globular and elongated cactus types, these are *Coryphantha vivipara*, *Pediocactus simpsonii*, two or three *Neobesseya*s, and a few *Echinocerei* that have withstood St. Louis' temperatures and these then should prove hardy in Virginia's climate.

In many Mid-Western homes, cacti are gaining great popularity, for they lend themselves superbly to indoor culture and can be successfully grown by amateurs with but a narrow window sill for the practice of this most fascinating hobby. Often cacti are the only kinds of plants that will thrive in the hot, dry air of apartment houses and city homes of moderate size. One will be surprised at the fine collection of odd picturesque cacti that can be developed in any ordinary window. These may range in size from the diminutive to the large and luxuriant. With moderate care they are possibly the easiest of all plants to maintain and will add much enjoyment, especially during the drab wintry days. Even the tiny cacti will be highly attractive if set with their minute pots into small trays of sand and rock, forming miniature desert scenes. Almost all types of cactus will make handsome dish gardens and these plants can be used to advantage with other succulents such as Aloes, Sedums, Gasterias, Haworthias and Euphorbias.

There is one method of cactus culture that will offer much pleasure to those who avail themselves of such an opportunity. It is the growing of cacti in glass-enclosed containers. This mode is especially recommended at this time, for these glass-enclosed deserts make very unique, yet excellent gifts at Christmas time. There seems prevalent the idea that cacti do not thrive well in glass receptacles, yet this common belief is wholly unstable for I have been growing succulents in all kinds of glass containers for the past five years, with an unmistakable amount of success. Some of my cases are from two to three and four years old and not only are the plants within alive, but growing prosperously as well. Since I have had such excellent results, I never fail to recommend this method of raising succulents, especially cacti. When once planted these terrariums require very little care and possess the advantage that they may be moved about without fear of one's being stuck by the spines of the prickly plants within.

How to make a desert terrarium? Quite easy, yet a certain amount of patience will be required. Any clear glass enclosure, such as a discarded aquarium or a bell jar will be found suitable for the purpose. An inch of gravel is placed in the bottom, some pieces of charcoal to keep the soil sweet, and then two or three inches of good porous soil is added. In planting avoid over-



Window arrangements by the Author.

crowding; use seedling plants about two to three inches high, and wherever possible, rely on cacti primarily, as these will be more satisfactory than the tender-leaved Sedums, Mesembryanthemums, etc. After planting operations are performed, spread a thin layer of fine gravel on the surface of the soil, but it will not be necessary to water immediately.

A glass cover placed over the opening at the top will prove beneficial, as an occasional "sweat" is desirable, especially in the summer season. The lid should never be kept on tight (except during the "sweating process"), so as not to interfere with the circulation of fresh air in the miniature greenhouse. Avoid too much moisture, for this becomes an inducement for rot diseases and molds, detrimental to successful glass gardening. All terrariums should be placed in well-lighted positions during the day, but at night they may serve as ornaments on the mantel, bookcase, or table.

Give these novel plants a little attention and much pleasure will be derived from them. They afford a real opportunity for study of one of the most fascinating groups of plant life.

LADISLAUS CUTAK, in charge of succulents,
Missouri Botanical Gardens.

FROM VIRGINIA

Let me first say that I did not think it possible to improve upon the JOURNAL and am much surprised to find that I have been mistaken. (The article on Plant Diseases in the May issue was alone worth the price of membership.) During the past fiscal year we have seen the beginning of the "Glossary" of which I cannot give thanks enough. I am not a linguist and living in a section where there are no fellow collectors I naturally pronounced all names and adjectives as they were spelled as I could not hear the correct pronunciations from another. Imagine my embarrassment when I discovered that I was mispronouncing my favorite, the Haworthias. The "glossary" not only gives one correct pronunciations, but also a clear and concise definition. Now we are told the coming year will not only give us the completion of the "Glossary" but also the looked forward to reports of the Nomenclature Committee and plus the color pictures. Can we honestly ask for more, except—to ask our Editor if it would be possible for him to reprint the pictures used in the JOURNAL.

The reason I mention the reprints is as follows: first, I am strongly in favor of all collectors specializing. Decide upon the genus *Haworthia*, *Mammillaria*, etc., and collect chiefly the plants of this genus. In the first place, you will not only be able to give the Society

more tangible information but you will develop something, shall we call it zeal, within yourself which money will not be able to buy. Secondly, I can heartily recommend the use of a loose-leaf notebook. Practically all collectors use a notebook of some sort to list their plants and number them as they arrive; others may use a card index to keep notes of the progress of their plants, but I have found the loose-leaf method far more satisfactory.

Write the name of your plant on a single sheet at the top and left of the page. Below that paste a picture of the individual plant. (This is the reason I ask it is possible to have the Editor reprint from the JOURNAL and sell the pictures to the members at a few cents each.) This will permit us to have a correct picture of the plants of our specialization without going to the unnecessary expense of buying all others. I know that the average plant collector is not a photographer (I have tried several times without success for I cannot get clear enlargements). Besides the picture place your own record of the plant and at the bottom of the page, and on the back if necessary, write the description of the plant as given to us by some experienced and expert botanist.

You will find these descriptions invaluable and placing them in your note-book with the record of your own plant will be the means of having this information at your finger tips and it will not be necessary to search through the back issues of your JOURNALS. On the other hand it will give you a remarkable acquaintance with each separate plant.

In the beginning of your notebook place all the notes you can secure on the subject, i.e., cultural notes, propagation notes, habits and behavior and anything else which applies generally or specifically to your favorite genera. Also enter into correspondence with fellow fanciers and compare notes and be sure to put all your finding in your notebook; for instance, the time of blooming in various sections, their tendency to be hardy or otherwise, the results of different exposures to light and weather, etc. You will find that your notebook will be the means of spending many an idle hour and will make for a closer knowledge and appreciation.

If you think you know and love your plants now I dare you to try the notebook method. Let me remind you to copy all descriptions as you find them. The personal notes above can be filled in as you acquire the plant and become familiar with its habits. Should you wait to copy the description until you acquire the plant you will soon discover that you will have a hard time or be entirely unable to relocate it.

W. E. J. GOTTSALL.

(Example of Sheet)

HAWORTHIA RESENDEANA v. P.

(classified as *Apicra bicarinata* Resende—1937)

Acquired January 1, 1939. Schick .35

Plant—3 cm. broad, 7 cm. tall.

Bloom—

Position—East window etiolation began; transferred to west with favorable results. July 7, 1939, pale new leaves have taken on natural color or very dark green.

Plant originally purchased as *H. viscosa*, however, Schick corrected this mistake by description in "D. P. Life," Vol. 10, No. 12, P. 225-226. A close check proves this latter classification to be correct.

DESCRIPTION

Stem elongated, proliferous from the base, erect or ascending, about 3-3½ cm. across, densely and spirally leafed.

LOCALITY: Unknown, but doubtless from S. Africa; type plant cultivated in the Botanical Garden, Hamburg, as *Apicra bicarinata*. Named in honor of Dr. Flavio Resende, of Porto, Portugal, who thought the plant fell under the genus *Apicra* because he did not see the flowers.

No. S 103

Two Ornamental Mexican Euphorbias

By LOUIS CUTTER WHEELER

Gray Herbarium, Harvard University, Cambridge, Massachusetts

EUPHORBIA WHITEI sp. nov.

Frutex 0.85-2 m. altus; caulibus gracilibus, plerumque glabris; cortice spadiceo; foliis alternis, petiolis gracilibus, quam laminas ca. 1-2 plo brevioribus, laminis 1-4 cm. longis, plerumque ovatis, integris; cyathii in cymosis simplicibus; involucris late obconicis, ca. 0.9 mm. diametro, extus strigosis; glandulis 5, transverse linearibus; appendiculis 5-9-partitis, laciniis linearibus, glandulis subaequantibus; stylis bifidis, subclavatis, 0.4-0.6 mm. longis; capsulis profunde 3-lobatis, 2.7-3 mm. longis, glabris; seminibus ovoideis, 1.7-1.9 mm. longis, leviter favosis.

Shrub 0.85-2 meters high, branches slender, mostly glabrous at maturity, crisply puberulent when young, bark bright brown; leaves alternate one small pair just beneath each cyme, petioles slender, from one-half as long as to nearly equaling the blades, blades thin, 1-4 cm. long, mostly strigilose when young, glabrate at maturity especially on the upper surface, dull green above, glaucous beneath, mostly ovate, varying toward elliptical, base often slightly cuneate, margin essentially entire; stipules 0.2-0.6 mm. long on the main stems, subulate, in age deciduous and the bases becoming slightly corky; cyathia borne in simple cymes or panicles of cymes on lateral branchlets mostly 2-9 cm. long, the axis crisply pubescent, cymes with opposite linear to linear-spatulate bracts; peduncles 0.7-1.5 mm. long, glabrous or with sparse crisp hairs; involucre broadly obconical, ca. 0.9 mm. in diameter, broader than long, strigose outside, strigose inside on upper half; lobes about equaling or slightly exceeding the glands, parted above into few to several linear subclavate segments glabrous at the tip; glands 5, transversely linear, 0.5-0.7 mm. long; appendages parted into 5-9 linear segments ca. 0.3 mm. long, often with a slight tooth about halfway up, glabrous or bearing a few hairs below; bracteoles several between each fascicle, glabrous on lower fourth or third and at very tip, hairy between, generally somewhat united below, free portion linear, about equaling the androphores; staminate flowers 4-7 per fascicle, 23-30 per cyathium; androphores glabrous, ca. 0.7 mm. long; gynophore glabrous, soon somewhat deflexed; ovary glabrous, roundly 3-lobed; styles bifid nearly to the base, subclavate, 0.4-0.6 mm. long, some small subsidiary papillae on the point of union of the styles; capsule glabrous, 2.7-3 mm. long, slightly wider than long, deeply and roundly 3-lobed; seeds ovoid, 1.7-1.9 mm. long, 1.3-1.4 mm. tangentially and radially, radially broadly ovate, surface shallowly favosely pitted, two shallow irregular grooves extending from the base half to two-thirds to the apex on either side of the raphe, coat white, microscopically reticulate.

Type: near streamlet in partial shade, bush 0.85 meters high, long whip-like branches, Petlacala, Sierra Madre del Sur, Distrito Mina, Guerrero, Mexico, altitude 1,790 meters, Dec. 26, 1937, Ynes Mexia 9031 (Gray Herbarium). Additional collections from the Guerrero, Mexico, are: by the river, 2 meters high, Ixtapan, Dist. Temascaltepec, alt. 1,000 meters, Mar. 21, 1933, George B. Hinton 3632 (Gray Herb.); "in the water", Nanchititla, Dist. Temascaltepec, Nov. 21, 1933, George B. Hinton 5240 (Gray Herb.).

It is a pleasure to name this species in honor

of Alain White, co-author with Sloane of "The Stapelieae" and well-known to the readers of this JOURNAL for this and his other work on succulents.

This new species is a member of *Euphorbia* subgenus *Agaloma* (Rafinesque) House sect. *Cyrtospermum* Boissier subsection *Leptopus* (Klotzsch & Garcke) comb. nov., based on genus *Leptopus* Klotzsch & Garcke, Monatsb. Akad. Berlin 1859: 249. 1859. Its relationships are elucidated by the key after the next species.

The charm of *Euphorbia Whitei* is two-fold. It is a delicate slender shrub with clear, almost shiny brown bark, and leaves on delicate slender petioles. The numerous flowering branchlets suffused with red and clustered with the white-hairy little "flowers" gives the flowering branches a delicate, almost feathery, appearance with a pleasing blending of green leaves, and reddish branchlets clothed with white hairs. But the beauty of the plant does not end with its general appearance. The little "flowers" are fascinating under a lens. Each of the five little glands with its fringe of segments of the appendage makes a little fairy comb. Even the hairs on the little cup of the "flower" are pretty. Mounted in water and viewed under a microscope they are seen to be composed of minute crystal-clear cells set end-to-end.

Euphorbia Whitei is a very attractive plant well worth cultivating. Since it grows in moist shady places it would not die of a surfeit of water under ordinary garden conditions. Like *Euphorbia pulcherrima*, the Poinsettia, and *E. fulgens* (*jacquiniaeiflora*) it blooms in the winter. The collection made in November is just coming into bloom; the one made in March is past its prime. Mrs. Mexia's collection, made the day after Christmas, is in full flower and fruit. This shrub should prove particularly suited to coastal Southern California.

EUPHORBIA SLOANEI sp. nov.

Frutex circa 2 m. altus; caulibus gracilibus, glabris; foliis alternis, petiolis gracilibus, quam laminas circa 1-2plo brevioribus, laminis plerumque 1-2.7 cm. longis, plerumque glabris, ovatis vel late ovato-lanceolatis, integris; cyathii in cymosis simplicibus; involucris circa 1 mm. diametro, late campanulatis, extus glabris;

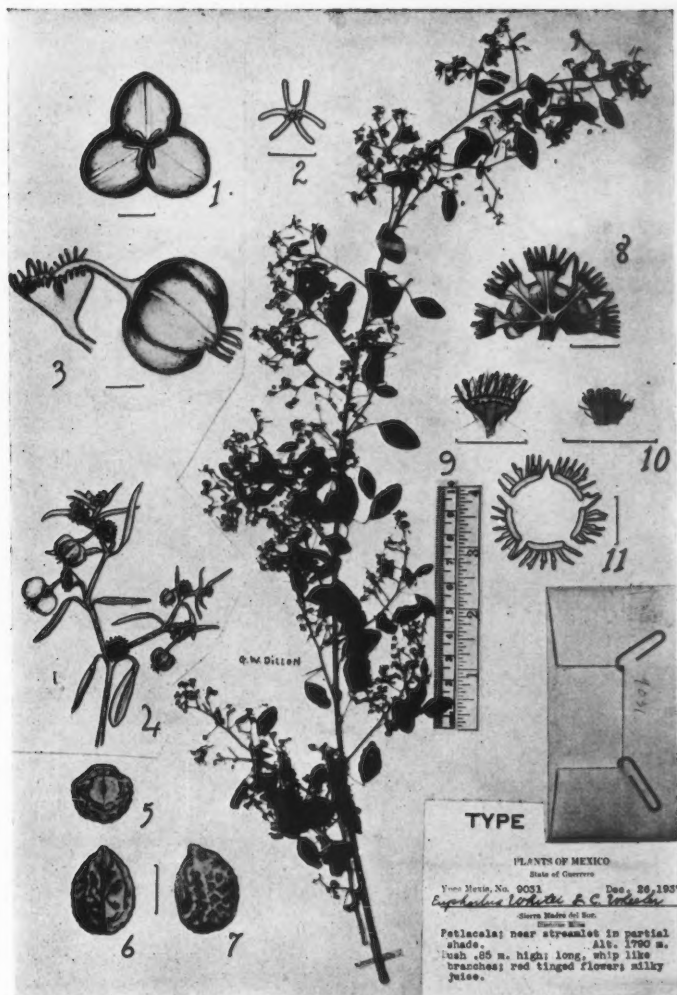


PHOTO BY W. H. HODGE

Photograph of the type specimen of *Euphorbia Whitei* with drawings of diagnostic parts: 1, end view of capsule; 2, side view of styles; 3, cyathium ("flower") with mature capsule; 4, a cyme; 5, basal view of seed; 6, ventral view of seed; 7, side view of seed, raphe on left; 8, involucre opened and lobes folded in; 9, gland with its many-parted appendage; 10, lobe of the involucre; 11, glands and appendages from above. Magnification of each figure indicated by the scale line representing 1 mm., reduction of the branch indicated by the scale on the sheet.

glandulis 5, transverse ovalibus vel oblongis; appendiculis glabris, bifidis, 0.9-1.4 mm. longis; stylis bifidis, 0.7-0.9 mm. longis; capsulis circa 2 mm. longis, profunde 3-lobatis, glabris; seminibus albidis, sphaeroideo-ovoideis, 1.1-1.3 mm. longis, punctato-favosis et tuberculatis.

Subscandent shrub ca. 2 meters high; stems glabrous, slender, with divaricate lateral branchlets up to 15 cm. long; leaves alternate except for the reduced bracteal leaves of the inflorescence, petioles slender, often with sparse crisped hairs, one-half as long as to nearly equaling the blades, blades sometimes with a few appressed hairs beneath, ovate to broadly ovate-lanceolate,

from 2.7 cm. in maximum length grading to the bracts of the inflorescence as short as 1.5 mm. long, base often slightly cuneate; stipules deciduous or obsolete; cyathia borne on the lateral branchlets in numerous, mostly unilateral, bracteate cymes of few to several, axis often crisply pubescent; peduncles 1-2.5 mm. long, essentially glabrous, soon disarticulating near the base; in-

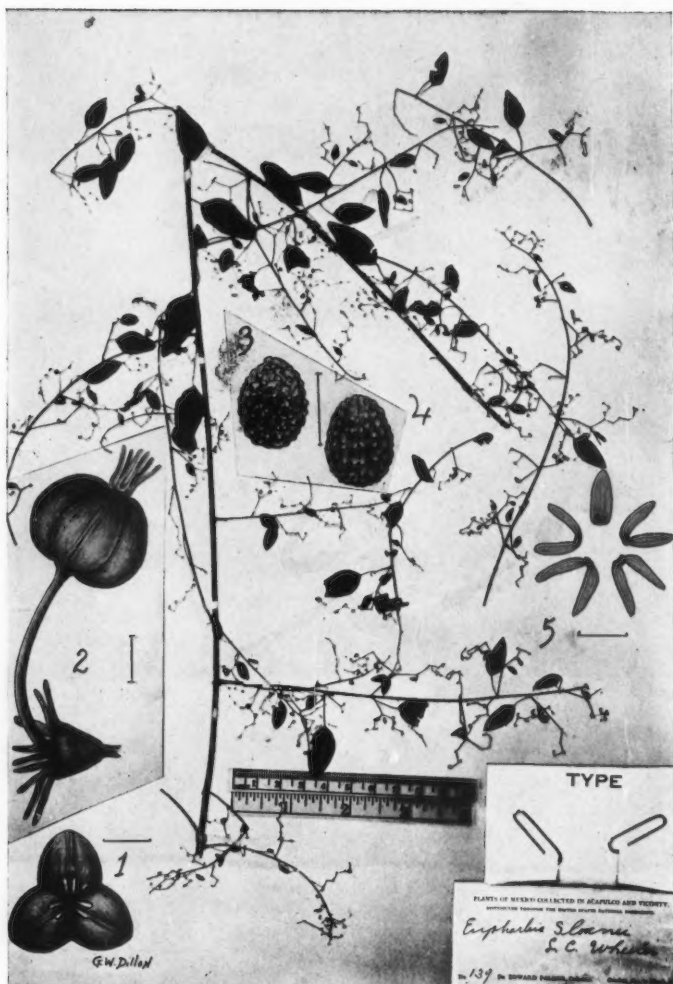


PHOTO BY W. H. HODGE

Photograph of the type specimen of *Euphorbia Sloanei* with drawings of diagnostic parts: 1, end view of capsule; 2, cyathium ("flower") with mature capsule; 3, seed, lateral view, raphe on left; 4, seed, ventral view; 5, glands and appendages from above. Magnification of each figure indicated by the scale line representing 1 mm., reduction of the branch indicated by the scale on the sheet.

volucres ca. 1 mm. in diameter, glabrous outside, glabrous inside except for a line extending halfway down beneath each gland, broadly campanulate, developing an abrupt shoulder at the base in age; lobes triangular, acuminate, exceeding the glands but inflexed; glands 5, transversely oval to oblong, 0.3-0.4 mm. long; appendages glabrous, bifid to the base into linear segments, or one on a cyathium frequently entire, 0.9-1.4 mm. long; bracteoles mostly 4 between each fascicle, about equaling the androphores, pubescent except at the base; staminate flowers ca. 18; androphores 0.7-0.9 mm. long, glabrous, gynophore glabrous, very long-exserted and erect or slightly re-

curving; ovary not seen; styles bifid nearly to the base, 0.7-0.9 mm. long; capsule ca. 2 mm. long, glabrous, strongly and nearly roundly 3-lobed; seeds sordid to pale brownish, spheroidally ovoid, 1.1-1.3 mm. long, 1-1.1 mm. in diameter, covered with low tubercles interspersed with shallow pits often with a punctate pit in the bottom of each.

Type: "with many long slender stems hanging about the tops of other shrubs to the height of 6 or 8 feet," Acapulco, Guerrero, Mexico, Nov., 1894, Dr. Edward Palmer 139 (Gray Herbarium). Known only from the type collection which has lain nameless for forty-five years.

It is a pleasure to name this species for Boyd L. Sloane.

Euphorbia Sloanei is specialized for a shrubby habitat in which its slender branches are supported by other shrubs. In habit it is probably like the Matrimony Vine (*Lycium balimifolium*) but differs from that in its slender spineless stems.

The fact that one of the appendages on many of the cyathia "flowers" is entire while the others are bifid, is a curious circumstance. The division of the appendages has been used to delimit this subsection and is a fairly workable character but in this case both sorts occur even in one cyathium. The seeds of *E. Sloanei* are fascinatingly sculptured. Most of the pits are of a remarkable kind. They are gently rounded concavities with a minute sharp pit in the bottom. They resemble nothing else so much as a negative cast of a Lilliputian breast. Some of the delicate herbaceous species of the subsection *Leptopus* (to which *E. Sloanei* belongs) have this type of pitting developed to exquisite perfection. In *E. Sloanei* some of the pits are fairly perfect while others lack the sharp pit in the bottom of the shallow one. Thus it is transitional, in this character, between the herbaceous species with perfect pitting and *E. Whitei* with merely shallowly and irregularly pitted seeds. The following key will separate the two new species from their closest relatives:

Leaves alternate except the reduced bracts of the inflorescence.

Appendages of the glands parted into 5-9 segments scarcely as long as the glands.. *E. Whitei*

Appendages bifid (or one often entire), more than twice as long as the glands.. *E. Sloanei*

Leaves all opposite or whorled.

Appendages bifid, tapering from base to apex; main axis not branching umbellately at the summit.....

E. chiapensis

Appendage 4-6-parted, expanding gradually from the base to the abruptly expanded apex; main axis branching umbellately at the summit.....

E. Mexiae

This little group of four species is confined to the southern Pacific slope of Mexico. All are of a very slender habit. Some are half-climbing. *E. Mexiae* Standley is described on the label of the type as a tall inclined herb, partially scandent, 3 to 4 meters tall. It was collected in woods on the mountainside, altitude 700 meters, Santa Cruz de Vallarta, Jalisco, Ynes Mexia 1272 (Field Museum). In habit it forms a transition from the strictly herbaceous species of the subsection *Leptopus* to the three following slender-stemmed shrubs: *E. Whitei* is next geographically. It comes close to the range of *E. Sloanei* for Mrs. Mexia collected *E. Whitei* in the Sierra Madre del Sur and Acapulco, the type locality of *E. Sloanei*, is on the coast just south of this mountain range. In fact Dr. Edward Palmer may have collected *E. Sloanei* somewhere on the south edge of the Sierra Madre del Sur for he collected his plant in the general, rather than necessarily the immediate, vicinity of Acapulco. *E. chiapensis* T. S. Brandegee was collected in the Sierra de Tonala, Chiapas, Sept., 1913, C. A. Purpus 6895 (Gray Herb., isotype). This station is near the coast. Standley in "Trees and Shrubs of Mexico" gives *E. chiapensis* as occurring also in Oaxaca.

If collectors can relocate these plants a few more species will be added to the rarities for garden and greenhouse.

IMPORTING PLANTS

MR. COMBS, Cincinnati:

Mr. Haselton forwarded to me your inquiry as to the method of importing collected plants from Mexico.

Write to the Department of Agriculture for an application form for a plant importation permit. In filling this form out, in the space designated for species and number, simply write "Cactus and Succulents to be collected in Mexico, number and species to be furnished at time of entry." You will probably receive a permit to import 5,000 cacti and 250 succulents!

In listing the port of entry, you may as well include: San Ysidro, California; Nogales, Arizona, and Laredo,

Texas. In this way your permit will be good at any of the main entrances to Mexico.

As for collecting in Mexico, if you are getting only a few plants, it may not be necessary to get a Mexican Government permit, which is quite difficult.

This year's permits were valid only until June 30th, so be sure to give the approximate date that you plan to import. Also, have your plants clean, and be sure they are free of scale or insects. Thus you will avoid having them vacuum fumigated. You will probably be able to pass the plants through the customs duty free on baggage declaration, but if you intend to sell any, you will have to pay 25% duty. You will find the inspectors most cooperative.

GEORGE LINDSAY.

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<i>Echeveria derenbergii</i>10
<i>Sedum adolphii</i>10
<i>Sedum pachyphyllum</i>05
<i>Euphorbia lactea cristata</i>65, .75 and \$1.00
<i>Aloe brevifolia</i>05
<i>Gasteria verrucosa</i>05, .10 and .25
<i>Haworthia fasciata</i>35
<i>Haworthia margaritifera</i>25
<i>Haworthia reinwardtii</i>35

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